Federation of Malysia

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ASD 904 (2006) (English): Standards For Helidecks

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AIRPORT STANDARDS DIRECTIVE 904
[ASD 904]

STANDARDS FOR HELIDECKS

AIRPORTS STANDARDS DIVISION
DEPARTMENT OF CIVIL AVIATION MALAYSIA

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INTRODUCTION

1. This Airport Standards Directive contains specifications that prescribe the physical characteristics, obstacle limitation surfaces, facilities and technical services that shall be provided at helidecks.

2. This Directive has been written in general terms. Specific advice could be obtained from the Authority at:

Department of Civil Aviation
Airport Standards Division
Level 1 Block Podium B 4G4 Precinct 4
Federal Government Administration Offices
62570 Putrajaya.
Phone: 03-88714000
Fax : 03-88714335

APPLICABILITY

3. The specification in this Directive shall apply to the approval, licensing or certification of helidecks.

4. Helidecks are heliports located on a floating or fixed off-shore structure.

AUTHORITY

5. The Authority referred to in this Directive is the Director General of Civil Aviation.

HELIPORT DOCUMENTATION

1. AERODROME MANUAL

6.1 The aerodrome manual is a fundamental requirement for the approval, licensing or certification of helidecks.

6.2 The aerodrome manual shall contain all pertinent information concerning the helideck site, facilities, services, equipment, operating procedures, organization and management.

6.3 The information presented in the aerodrome manual shall demonstrate that the helideck conforms to specifications of Airport Standards Directive 904, other relevant Directives, the Civil Aviation Regulations 1996 and the Civil Aviation Act 1969.

6.4 The Aerodrome Manual shall take the form and contains information as detailed in Appendix A.

2. GEOGRAPHICAL COORDINATES

7.1 Geographical coordinates indicating latitude and longitude shall be determined and reported in terms of the World Geodetic System – 1984 [WGS-84] geodetic reference datum.

7.2 The order of accuracy of the field work shall be such that the resulting operational navigation data for the phases of flight will be within the maximum deviations, with respect to an appropriate reference frame, as indicated herein –

a. significant obstacles on and in the vicinity of the helideck and positions of radio navigation aids located on the helideck: three meters;

b. geometric centre of the FATO/TLOF: one meter; and

c. heliport reference point: thirty meters.

3. HELIPORT REFERENCE POINT

8.1 A heliport reference point shall be established for a helideck.

8.2 The heliport reference point shall be located near the initial or planned geometric centre of the helideck and shall normally remain where first established.

8.3 The position of the heliport reference point shall be measured and reported in degrees, minutes and seconds.

4. HELIPORT ELEVATIONS

9.1 The helideck elevation shall be measured and reported to the nearest meter.

5. HELIPORT DIMENSIONS

10.1 The following data shall be measured or described, as appropriate, for each facility provided on a helideck –

a. heliport type;

b. FATO/TLOF – true bearing, designation number [where appropriate], dimension, slope, surface type, bearing strength in tonnes; and

c. visual aids for approach procedures, markings and lighting of FATO/TLOF.

10.2 The geographical coordinates of the geometric centre of the FATO/TLOF shall be measured and reported in degree, minutes, seconds and hundredths of seconds.

10.3 The geographical coordinates of significant obstacles on and in the vicinity of the helideck and positions of radio navigation aids located on the helideck shall be measured and reported in degree, minutes, seconds and tenths of seconds. In addition, the top elevation rounded up to the nearest meter, marking and lighting [if any].

6. DECLARED DISTANCES

11.1 The following distances shall be declared, where relevant, for a helideck –

a. take-off distance available [TODA]; and

b. rejected take-off distance available [RTODAH]; and

c. landing distance available [LDA].

11.2 Take-off distance available shall be the measured distance of the length of the FATO.

11.3 Rejected take-off distance available shall be the measured distance of the length of the FATO which includes the distance which is declared available and suitable for performance class 1 helicopter to safely complete a rejected take-off. The RTODAH must have a surface which is resistant to the effects of rotor downwash, be free of irregularities which could affect the safe landing of helicopters and have a bearing strength sufficient to accommodate the rejected take-off by performance class 1 helicopter.

11.4 Landing distance available shall be the measured distance of the length of the FATO plus the length of any additional area declared available and suitable for helicopters to complete the landing manoeuvre from height of 30 m. The surface of the additional area must have the same characteristics as the FATO.

7. RESCUE AND FIRE FIGHTING

12.1 The level of protection of rescue and fire fighting services shall be reported.

PHYSICAL CHARACTERISTICS

8. FINAL APPROACH AND TAKE-OFF AREA AND TOUCHDOWN AND LIFT-OFF AREA [FATO/TLOF]

13.1 On helideck, it is presumed that the FATO area and TLOF area will be coincidental.

13.2 A FATO/TLOF is an area which a helicopter completes the approach manoeuvre to a hover and land or lift-off the surface and commences movement into forward flight in the take-off manoeuvre.

13.3 A helideck shall be provided with at least one FATO/TLOF.

13.4 The FATO/TLOF dimensions shall be -

i. for a single main rotor helicopter or side-by-side twin main rotor helicopter, may be of any shape but shall be of sufficient size to contain an area within which can be drawn a circle of diameter not less than 1.0 times D of the largest helicopter the helideck is intended to serve;

ii. for omnidirectional landings by helicopters having tandem main rotors, may be of any shape but shall be of sufficient size to contain an area within which can be drawn a circle of diameter not less than 0.9 D;

iii. where provisions in described in ii. cannot be met, may be in the form of a rectangle with small side not less than 0.75 D and a long side not less than 0.9 D, but within this rectangle, bi-directional landings only permitted in the direction of the 0.9 D dimension.

13.5 No fixed objects shall be permitted around the edge of the FATO/TLOF, except for frangible objects, which, because of their function, must be located on the area.

13.6 Objects whose functions require them to be located edge of the FATO/TLOF shall not exceed a height of 25 cm.

13.7 The surface of the helideck shall be skid-resistant to both helicopters and persons -

a. helideck surface shall have an over-all coating of non-slip material;

b. the helideck surface should be laid to a fall or cambered to prevent pooling of liquids;

c. deflection of the helideck surface, due to loads from helicopter at rest, should not modify the drainage characteristics;

d. rope netting should preferably be provided to aid the landing of helicopters with wheeled undercarriage in adverse weather conditions and assist in stability of the helicopter in conditions of high winds. Similar facility is not recommended for helicopters with skid type undercarriage; and

e. tie-down points should be provided for securing helicopters.

13.8 Where the helideck is constructed in the form of a grating, the underdeck design shall be such that ground effect is not reduced.

9. **SAFETY NET**

14.1 A safety net shall be installed at helidecks, where the free movement of passengers and helideck personnel cannot be made without some risk.

14.2 The safety net shall extend outwards to at least 1.5 m from the edges of the safety area and be capable of withstanding, without damage, a 75 kg mass being dropped from a height of 1 m.

14.3 The safety net shall provide hammock effect for person falling into it rather than the trampoline effect produced by some rigid materials.

OBSTACLE RESTRICTION

10. OBSTACLE LIMITATION REQUIREMENTS

15.1 The helideck shall have an:

a. obstacle-free sector; and

b. limited obstacle sector, where necessary.

11. OBSTACLE-FREE SECTOR

16.1 There shall be no fixed obstacles within the obstacle-free sector above the obstacle free surface.

16.2 The following obstacle-free sector shall comprise an arc of at least 210º whose origin shall be -

a. for a single main rotor helicopter or side-by-side twin main rotor use, at any point on the periphery of the D climb surface; and

b. for a helicopters having tandem main rotors use, from the midpoint of the longer side of the rectangle.

16.3 The 210º sector shall totally enclose the FATO/TLOF.

16.4 The surface of the 210º sector shall be a horizontal plane level with the elevation of the FATO/TLOF. No obstacle shall protrude, except for items essential for the operation of the helideck such as lightings and fire fighting equipments. Such essential items shall not exceed at height of 25 cm above the elevation of the surface.

16.5 The obstacle protection shall extended below the heliport level. This protection shall extend over an arc of at least 180º with the origin at the centre of the FATO/TLOF and whose bisector is the extended centreline of the FATO/TLOF, with a descending gradient having a ratio of one unit horizontally to five units vertically from the edges of the FATO/TLOF within the 180º sector.

16.6 From the point where the gradient reaches water level, the surface shall extend at water level for a distance compatible with the take-off space required for the most critical helicopter the helideck intends to serve.

16.7 No obstacle should be allowed to protrude through the 180º area, except that support and maintenance vessel essential to the operation of the installation but shall be confined to within an arc subtended from the centre of the FATO/TLOF not exceeding 30º.

12. **LIMITED OBSTACLE SECTOR**

17.1 The limited obstacle sector shall contain a surface whose origin is the reference point of the surface of the obstacle-free sector and which substend and not covered by the obstacle-free sector, that is, a maximum of 150º.

17.2 The surface shall extend for a distance from the centre of the FATO/TLOF -

a. for a single main rotor helicopter or side-by-side twin main rotor use, out to a distance of 0.62D, objects shall not exceed a height of 0.05D above the FATO/TLOF. Beyond the arc, out to a distance of 0.83D, the surface rises at a rate of one unit vertically for each two units horizontally;

b. for omni-directional operation by helicopters having tandem main rotors, out to a distance of 0.62D, there shall be no fixed obstacle. Beyond the arc, out to a distance of 0.83D, object shall not the penetrate a level surface which has a height of 0.05D above the FATO/TLOF; and

c. for bi-directional operation by helicopters having tandem main rotors, out to a distance of 0.62D, object shall not the penetrate a level surface which has a height equivalent to 1.1 m above the FATO/TLOF.

17.3 To allow some flexibility in the location of essential items in the proximity of FATO/TLOF, it is permitted to swing the limited obstacle surface by a maximum of 15º in either direction when the FATO/TLOF is used for omni-directional operations.

VISUAL AIDS

13. A helideck meant for use by day and then only in good visibility conditions will need to display markings only. On the other hand, if the helideck is intended for use by night or in restricted visibility conditions by day or night it will need to be lighted as well.

14. WIND DIRECTION INDICATOR

19.1 A helideck shall be equipped with at least one wind direction indicator. Two indicators may berquired because the air over FATO/TLOF area may be subject to disturb air flow.

19.2 A wind direction indicator shall be constructed so that it gives a clear indication of the direction of the wind and a general indication of the wind speed.

19.3 A wind direction indicator shall be located so as to indicate the wind conditions over the FATO/TLOF area and in such a way as to be free from the effects of airflow disturbances caused by nearby objects or rotor downwash. It shall be visible from a helicopter in flight, in a hover or on the movement area.

19.4 A wind direction indicator shall be a truncated cone made of lightweight fabric and shall have minimum dimensions of 2.4 m in length, 0.6 m diameter at larger end and 0.3 m diameter at smaller end.

19.5 The colour of the wind direction indicator should be so selected so as to make it clearly visible and understandable, having regard to background. Where practicable, a single colour, orange should be used. Where a combination of two colours is required to give adequate conspicuity against changing backgrounds, they should be orange and white, or red and white, and should be arranged in five alternate bands the first and last band being the darker colour.

19.6 A wind direction indicator shall at a helideck intended for use at night shall be illuminated.

15. MARKINGS

20.1 The following markings shall be provided for a helideck –

a. heliport identification marking;

b. TLOF area marking;

c. touchdown marking;

d. maximum allowable mass marking;

e. obstacle-free sector marking; and

f. heliport name marking.

20.2 The helideck shall have an over-all coating of non-slip material and all paint marking on the surface of the helideck shall be made of non-skid material.

20.3 HELIPORT IDENTIFICATION MARKING

20.3.1 A heliport identification marking shall be provided at a helideck.

20.3.2 A heliport identification marking shall be located within the FATO/TLOF area, at or near the centre of the area.

20.3.3 A heliport identification marking shall consist of a letter H, white in colour. The dimensions of the marking shall be no less than those shown in Appendix F.

20.3.4 On helideck covered with a rope netting, the height of the marking should be increased to 4 m and the other dimensions increased proportionally.

20.3.5 The cross arm of the H shall be on or parallel to the bisector of obstacle-free sector.

20.4 TLOF AREA MARKING

20.4.1 A TLOF area marking shall be provided at a helideck.

20.4.2 A TLOF area marking shall be located along the perimeter of the TLOF area.

20.4.3 A TLOF area marking shall be consist of a continuous white line with a width of at least 30 cm.

20.5 TOUCHDOWN MARKING

20.5.1 A touchdown marking shall be provided at a helideck.

20.5.2 A touchdown marking shall be located so that when a helicopter for which the marking is intended is positioned, with the main undercarriage inside the marking and the pilot situated over the marking, all parts of the helicopter will be clear of any obstacle by a safe margin.

20.5.3 The touchdown marking may be offset away from the origin of the obstacle-free sector by no more than 0.1D where aeronautical study indicates that offsetting is necessary and the marking so offset would not adversely affect the safety.

20.5.4 The centre of the touchdown marking shall be located at the centre of the FATO/TLOF area.

20.5.5 A touchdown marking shall be a yellow circle and have a line width of at least 1 m.

20.5.6 The inner diameter of the circle shall be half the D-value or 6 m, whichever is greater.

20.6 MAXIMUM ALLOWABLE MASS MARKING

20.6.1 A maximum allowable mass marking shall be provided at a helideck.

20.6.2 A maximum allowable mass marking shall be located within FATO/TLOF and so arranged as to be readable from preferred final approach direction.

20.6.3 A maximum allowable mass marking shall consist of two digit numbers followed by a letter “t” to indicate the allowable mass in tonnes.

20.6.4 A numbers and the letter of the marking shall have a colour contrasting with the background and shall be in the form and proportion shown in Appendix G.

20.7 OBSTACLE-FREE SECTOR MARKING

20.7.1 An obstacle-free sector marking shall be provided at a helideck.

20.7.2 An obstacle-free sector marking shall be located on the TLOF marking.

20.7.3 An obstacle-free sector marking shall indicate the origin of the obstacle-free sector, the directions of the limits of the sector, which are indicated by a black chevron 30 cm in height and the D value of the helideck as shown in Appendix H.

20.8 HELIPORT NAME MARKING

20.8.1 A heliport name marking shall be provided at a helideck where visual identification of the helideck is necessary.

20.8.2 A heliport name marking shall be placed on the helideck so as to be visible, as far as practicable, at all angles above the horizontal.

20.8.3 A heliport name marking shall consist of the name or alphanumeric designator of the helideck as used in R/T communication.

20.8.4 The characters of the marking shall not be less than 3 m in height. The colour of the marking should contrast with the background.

20.8.5 A heliport name marking intended for use at night or during conditions of poor visibility shall be illuminated.

16. **LIGHTS**

21.1 The following lights shall be provided at helideck intended for use by night or in restricted visibility condition by day or night –

a. heliport beacon;

b. TLOF area lights; and

c. obstacle lights.

21.2 Under certain operational conditions, the following lights are required at helideck intended for use by night or in restricted visibility condition by day or night -

a. visual alignment guidance system; and

b. helicopter approach path indicator.

21.3 **HELIPORT BEACON**

21.3.1 A heliport beacon shall be provided at a helideck where –

a. long-range visual guidance is considered necessary and is not provided by other visual means;

b. identification of the helideck is difficult due to surrounding lights.

21.3.2 The heliport beacon shall be located on or adjacent to the helideck preferably at an elevated position and so that it does not dazzle the pilot at short range. Where a heliport beacon is likely to dazzle pilots at short range it may be switched off during the final stages pf the approach and landing.

21.3.3 The heliport beacon shall emit repeated series of equispaced short duration white flashes in the format shown in Appendix I.

21.3.4 The lights from the beacon shall show at all angles of azimuth.

21.3.5 To ensure that pilots are not dazzled during the final stages of the approach and landing, brilliancy control with 10 per cent and 3 per cent settings or shielding should be provided.

21.4 **TLOF AREA LIGHTS**

21.4.1 TLOF area lights shall be provided.

21.4.2 TLOF area lighting system shall consist of one or more of the following -

a. perimeter lights; and

b. floodlighting and/or luminescent panel lights.

21.4.3 TLOF area perimeter lights shall be placed along the edge of the TLOF area or within a distance of 1.5 m from the edge.

21.4.4 Where the FATO/TLOF area is a circle, the perimeter lights shall be –

a. located on straight lines in a pattern which will provide information to pilot on drift displacement; and

b. where, the above is not practicable, evenly spaced around the perimeter of the FATO/TLOF at an appropriate interval.

21.4.5 TLOF area perimeter lights shall be spaced -

a. uniformly at intervals of not more than 3 m. with a minimum of four lights on each side including a light at each corner;

b. evenly, where lights are arranged in a circle, with a minimum of fourteen lights.

21.4.6 TLOF area perimeter lights shall installed such that the pattern cannot be seen by pilots from below the elevation of the FATO/TLOF area.

21.4.7 TLOF area perimeter lights shall be fixed omni-directional lights showing green.

21.4.8 TLOF area perimeter lights shall be inset.

25.1.1 ASPSL or LP lights, when provided to enhance surface texture cues, shall be placed around the touchdown marking. At these location, the ASPSL or LP should emit yellow. ASPSL or LP lights should not be placed adjacent to perimeter lights.

21.4.9 LP lights shall not extend above the surface by more than 2.5 cm.

21.4.10 LP lights shall have a minimum width of 6 cm.

21.4.11 TLOF floodlighting shall be located and adequately shielded so as to avoid glare to pilots in flight or to personnel working on the area. The arrangement and aiming of floodlights shall be such that shadows are kept to a minimum.

21.4.12 TLOF floodlighting shall be not more than 25 cm in height.

21.5 **OBSTACLE LIGHTS**

21.5.1 Specification on lighting of obstacles included in ASD 402, are equally applicable to helidecks.

21.5.2 Obstacles shall be floodlighted if it is not possible to display lights on them.

21.6 VISUAL ALIGNMENT GUIDANCE SYSTEM

21.6.1 A visual alignment guidance system should be provided to serve non-instrument approaches to a helidek where one of the following conditions exists -

a. obstacle clearance, noise abatement or traffic control procedures require a particular direction to be flown;

b. the environment of the helideck provides few visual surface cues; and

c. it is physically impracticable to install an approach lighting system.

21.6.2 A visual alignment guidance system shall be provided to serve instrument approaches to a helideck where one of the following conditions exists -

a. obstacle clearance, noise abatement or traffic control procedures require a particular direction to be flown; and

b. the environment of the helideck provides few visual surface cues.

21.6.3 A visual alignment guidance system shall be located such that a helicopter is guided along the prescribed track towards the FATO/TLOF area, preferably at the downwind edge of the FATO/TLOF area.

21.6.4 The light unit shall be frangible and mounted as low as possible.

21.6.5 Where the lights of the system needs to be seen as discrete sources, light units shall be located such that at the extremes of system coverage the angle subtended between units as seen by the pilots shall not be less than 3 minutes of arc.

21.6.6 The angles subtended between light units of the system and other units comparable or greater intensities shall also not be less than 3 minutes of arc.

21.6.7 The signal format of the alignment guidance system shall include a minimum of three discrete signal sectors providing “offset to the right”, “on track” and “offset to the left” signals.

21.6.8 The signal format of the alignment guidance system shall be such that there is no possibility of confusion between the system and any associated visual approach slope indicator or other visual aids.

21.6.9 The system shall avoid the use of same coding as any associated visual approach slope indicator.

21.6.10 The signal format shall be such that the system is unique and conspicuous in all operational environments.

21.6.11 The useable coverage of the alignment guidance system shall equal to or better than that of the visual approach slope indicator system, with which it is associated.

21.6.12 A suitable intensity control shall be provided so as to allow adjustment to meet the prevailing conditions and to avoid dazzling the pilots during approach and landing.

21.6.13 An alignment guidance system shall be capable of adjustment in azimuth to within ± 5 minutes of arc of the desired approach path.

21.6.14 The angle of azimuth of alignment guidance system shall be such that during an approach a helicopter at the boundary of the "on track" signal will clear all objects in the approach area by a safe margin.

21.6.15 The characteristic of the obstacle protection surface is as follows –

SURFACE AND DIMENSIONS		NON-INSTRUMENT FATO	INSTRUMENT FATO
Length of inner edge		Width of safety area	Width of safety area
Distance from end of FATO		3 m minimum	60 m
Divergence		10%	15%
Total length		2 500 m	2 500 m
Slope	PAPI	0.57º	0.57º
	HAPI	0.65º	0.65º
	APAPI	0.9º	0.9º

21.6.16 New objects or extension of existing objects shall not be permitted above the obstacle protection surface, except when, in the opinion of the authority, the new object or extension would be shielded by an existing immovable object.

21.6.17 Existing objects above an obstacle protection surface shall be removed, except when, in the opinion of the authority, the object is shielded by an existing immovable object, or after aeronautical study it is determined that the object would not adversely affect the safety of operations of helicopters.

21.6.18 In the event of the failure of any component affecting the signal format the system will automatically switched off.

21.6.19 The light units shall be so designed that deposits of condensation on optical transmitting or reflecting surface will interfere to the least possible extent with the light signal and will not cause spurious or false signals to be generated.

21.6.20 A flight inspection of a new installation shall be conducted to confirm the correct operation of the system.

21.6.21 A routine scheduled inspection shall be made to ensure the correct operation of the system.

21.7 HELICOPTER APPROACH PATH INDICATOR

21.7.1 A helicopter approach path indicator should be provided to serve non-instrument approaches to a helideck where one of the following conditions exists -

a. obstacle clearance, noise abatement or traffic control procedures require a particular direction to be flown;

b. the environment of the helideck provides few visual surface cues; and

c. the characteristic of the helicopter require a stabilized approach.

21.7.2 A HAPI shall be located such that a helicopter is guided to the desired position within the FATO/TLOF area and aligned in azimuth with the preferred approach direction.

21.7.3 The light unit shall be frangible and mounted as low as possible.

21.7.4 The signal format of the HAPI shall include four discrete signal sectors providing an “above slope”, an “on slope”, a “slightly below” and a “below slope” signal.

21.7.5 The signal format of the HAPI shall be shown as in Appendix L.

21.7.6 The signal repetition rate of the flashing sector of the HAPI shall be at least 2 Hz.

21.7.7 The angular size of the “on slope” sector of the HAPI shall be 45 minutes.

21.7.8 The angular size of the “slightly below” sector of the HAPI shall be 15 minutes.

21.7.9 Colour transition of the HAPI in the vertical plane shall be such as appear to an observer at a distance of not less than 300 m to occur within a vertical range of not more than three minutes.

21.7.10 The transmission factor of a red or green filter shall not be less than 15 per cent at the maximum intensity.

21.7.11 A full intensity of the red light of the HAPI shall have a Y-coordinate not exceeding 0.320.

21.7.12 A full intensity of the green light of the HAPI shall be within the following boundaries -

Yellow boundary	$y = 0.726 – 0.726x$
White boundary	$x = 0.625y – 0.041$
Blue boundary	$y = 0.390 – 0.171x$

21.7.13 A suitable intensity control shall be provided so as to allow adjustment to meet the prevailing conditions and to avoid dazzling the pilots during approach and landing

21.7.14 A HAPI system shall be capable of adjustment in elevation at any desired angle between 1 degree and 12 degrees above the horizontal with an accuracy of ± 5 minutes of arc.

21.7.15 The angle of azimuth of elevation setting of HAPI shall be such that during an approach a helicopter at the upper boundary of the “below slope” signal will clear all objects in the approach area by a safe margin.

21.7.16 In the event of vertical misalignment of a unit exceeds ± 0.5º, the will automatically switched off or if the flashing mechanism fail, no light will be emitted in the failed flashing sector(s).

21.7.17 The light units shall be so designed that deposits of condensation on optical transmitting or reflecting surface will interfere to the least possible extent with the light signal and will not cause spurious or false signals to be generated.

21.7.18 An obstacle protection surface shall be established when it is intended to provide HAPI or other visual approach slope indicator.

21.7.19 The characteristic of the obstacle protection surface is as follows –

SURFACE AND DIMENSIONS		NON-INSTRUMENT FATO	INSTRUMENT FATO
Length of inner edge		Width of safety area	Width of safety area
Distance from end of FATO		3 m minimum	60 m
Divergence		10%	15%
Total length		2 500 m	2 500 m
Slope	PAPI	0.57º	0.57º
	HAPI	0.65º	0.65º
	APAPI	0.9º	0.9º

21.7.20 New objects or extension of existing objects shall not be permitted above the obstacle protection surface, except when, in the opinion of the authority, the new object or extension would be shielded by an existing immovable object.

21.7.21 Existing objects above an obstacle protection surface shall be removed, except when, in the opinion of the authority, the object is shielded by an existing immovable object, or after aeronautical study it is determined that the object would not adversely affect the safety of operations of helicopters.

21.7.22 When aeronautical study indicates that existing objects extending above obstacle protection surface could adversely affect the operations of helicopters, one or more of the following measures shall be taken -

a. suitably raise the approach slope of the system;

b. reduce the azimuth spread of the system so that the object is outside the confines of the beam;

c. displace the axis of the system and its associated obstacle protection surface by no more than 5º;

d. suitably displace the FATO/TLOF area; and

e. install a visual alignment guidance system.

RESCUE AND FIRE FIGHTING

17. **LEVEL OF PROTECTION**

22.1 On any helideck, there shall be provided and stored near to the means of access to that deck –

a. at least two dry powder extinguishers having a total capacity of not less than 45 kg.;

b. a suitable foam application system consisting of monitors or foam-making branch pipes capable of delivering foam solution to all parts of the helideck at a rate of not less than 6L/min/m^2 of the area contained within a circle of diameter D;

c. carbon dioxide extinguishers of total capacity not less than 18 kg. or equivalent, one of these extinguishers being so equipped as to enable it to reach the engine area of any helicopter using the deck; and

d. at least two dual purpose nozzles and hoses sufficient to reach any part of the helideck.

18. **RESCUE EQUIPMENT**

23.1 Rescue equipment commensurate with the level of helicopter operations shall be provided as follows –

Adjustable wrench	1
Axe, rescue, non-wedge or aircraft type	1
Cutters, bolt, 60 cm	1
Crowbar, 105 cm	1
Hook, grab or slaving	1
Hacksaw, heavy duty complete with 6 spare blades	1
Blanket, fire resistant	1
Ladder, length appropriate to Helicopter in use	1
Lifeline, 5 cm, 15 m in length	1
Pliers, side cutting	1
Set of assorted screwdrivers	1
Harness knife complete with sheath	1
Gloves, fire resistant	3 pairs
Power cutting tool	1

23.2 Rescue equipment should be stored adjacent to the helideck.

19. **ESCAPE ROUTE**

24.1 At least two escape routes, adjacent to each other, shall be provided at a helideck.

DEVIATIONS

20. The Department of Civil Aviation shall notify and publish deviations from any Standards and Recommended Practices contained in ICAO Annex 14 in the Aeronautical Information Services publications in compliance to the Article 38 of the Convention on International Civil Aviation.

21. The Appendices to this Directive shall be taken, construed, read and be part of this Directive.

DATO' IR. KOK SOO CHON
Director General
Department of Civil Aviation
Malaysia

Dated: 22 September 2005

AMENDMENT RECORD

Amendment Number	Amendment Date	Incorporated by	Incorporated on
1/2006	4 Jan 2006	Para 2	4 Jan 2006

APPENDIX A

PARTICULARS TO BE INCULDED IN AN AERODROME MANUAL

PART I : GENERAL

General information, including the following –

a. name of helideck owner/operator, and address and telephone number[s] at which the owner/operator can be contacted at all times;

b. purpose and scope of the aerodrome manual;

c. the condition for use of the helideck, including operational limitation and restriction;

d. the system for recording aircraft movements; and

e. obligations of the helideck owner/operator.

PART 2 : PARTICULARS OF THE HELIPORT SITE

General information, including a plan of the helideck showing the main helideck facilities, including visual aids and non-visual aids provided;

PART 3 : PARTICULARS OF THE HELIPORT

3.1 GENERAL INFORMATION

a. the name of the helideck;

b. the type of the helideck;

c. the location of the helideck from the nearest town and nearest aerodrome;

d. the geographical coordinates of the heliport reference point [WGS-84];

e. the elevation of the helideck; and

f. details of heliport beacon [if provided].

3.2 HELIPORT DIMENSIONS

a. FATO/TLOF – type, dimension, slope, true bearing, designation number and bearing strength in tonnes;

3.3 GEOGRAPHICAL COORDINATES

a. geometric centre of FATO/TLOF; and

b. significant obstacles in the approach and take-off paths, and the top elevation.

3.4 DECLARED DISTANCES

a. take-off distance available;

b. rejected take-off distance available; and

c. landing distance available.

3.5 VISUAL AIDS

a. visual aids viz. markings and lighting

b. wind direction indicator;

c. VAGS;

d. HAPI.

3.6 RESCUE AND FIRE FIGHTING

a. level of protection.

PART 4 : HELIPORT OPERATIONS PROCEDURES

4.1 ATC COORDINATION PROCEDURES

Particulars of procedures for coordination with Air Traffic Services Unit[s], including –

a. procedures for arrivals;
b. procedures for departures; and
c. communication facilities provided.

4.2 HELIPORT REPORTING PROCEDURES

Particulars of procedures for notifying any changes to the infrastructure, facilities and operational procedures, including –

a. arrangement for reporting changes; and
b. recording of changes.

4.3 ACCESS TO HELIPORT AREA

Procedure for the preventing of the unauthorized entry of person[s] into the helideck area including facilities provided to prevent such occurrence.

4.4 HELIPORT EMERGENCY PLAN

Particulars of the heliport emergency plan, including the following –

a. plans for dealing with emergencies occurring at the helideck;
b. details of test for equipment to be used in emergencies, including frequency of those tests; and
c. details of exercise to test the emergency plan, including the frequency of those exercises.

4.5 RESCUE AND FIRE FIGHTING

Particulars of facilities, equipment, personnel and procedures for meeting the rescue and fire fighting requirements.

4.6 INSPECTION OF HELIPORT

Particulars of procedures for the inspection of the helideck area and obstacle limitation surfaces, including –

a. details of inspection intervals and times;
b. inspection checklist and logbook; and
c. reporting of inspection findings and correction of unsafe conditions.

4.7 VISUAL AIDS AND ELECTRICAL SYSTEMS

Particulars of procedures for the inspection and maintenance, aeronautical lights [including obstacle lights], signs, markers and electrical systems –

a. arrangements for inspection;
b. reporting and recording of inspection findings;
c. correction of deficiencies;
d. arrangements for routine maintenance; and
e. arrangements secondary power supply.

4.8 MAINTENANCE OF HELIPORT AREA

Particulars of procedures for the inspection and maintenance of helideck area –

a. arrangements for inspection;
b. maintenance of paved areas;
c. maintenance of markings; and
d. maintenance of drainage.

4.9 HELIPORT SAFETY MANAGEMENT

Particulars of procedures to ensure safety during helideck operations -

a. helicopter arrival procedures [including engine shut-down];
b. helicopter departing procedure [including engine-start];
c. fuelling procedures and safety precautions;
d. protection from rotor downwash;
e. apron sweeping and cleaning;
f. arrangements for reporting incidents and accidents; and
g. personnel safety procedures.

4.10 OBSTACLE CONTROL

Particulars setting out the procedures for -

a. controlling obstacles within the authority of owner;
b. monitoring development within the obstacle limitation surfaces; and
c. coordination for controlling new developments in vicinity of the helideck.

4.11 REMOVAL OF DISABLED AIRCRAFT

Particulars of the procedures for removing of a disabled aircraft, including -

a. role of helideck owner and holder of the aircraft certificate of registration;
b. arrangements for notifying holder of the aircraft certificate of registration; and
c. arrangements for obtaining equipment and personnel to remove aircraft.

4.12 HANDLING OF HAZARDOUS MATERIALS

Particulars of the procedures for safe handling and storage of hazardous materials, including -

a. arrangements for special areas on the helideck for storage of inflammable liquids [including aviation fuel] and other hazardous material; and
b. method for the delivery, storage, dispensing and handling of hazardous material.

4.13 PROTECTION OF NAVAIDS

Particulars of the procedures for the protection of sites for radio navigational aids –

a. arrangements for controlling activities in vicinity of navaids installations;
b. arrangements for ground maintenance of these installations; and
c. arrangements for the installation of signs warning of radiation.

PART 5 : HELIPORT ADMINISTRATION

Particulars of the helideck administration, including –

a. the helideck organizational chart showing the name and position of key personnel;

b. the duty-list and responsibilities of key personnel, in particular the Heliport Manager and Heliport Duty Officer; and

c. the name and telephone number of the Heliport Manager.

APPENDIX B

HELIDECK OBSTACLE-FREE SECTOR

APPENDIX C

HELIDECK LIMITED OBSTACLE SECTOR
SINGLE MAIN-ROTOR AND SIDE-BY-SIDE TWIN ROTOR

APPENDIX D

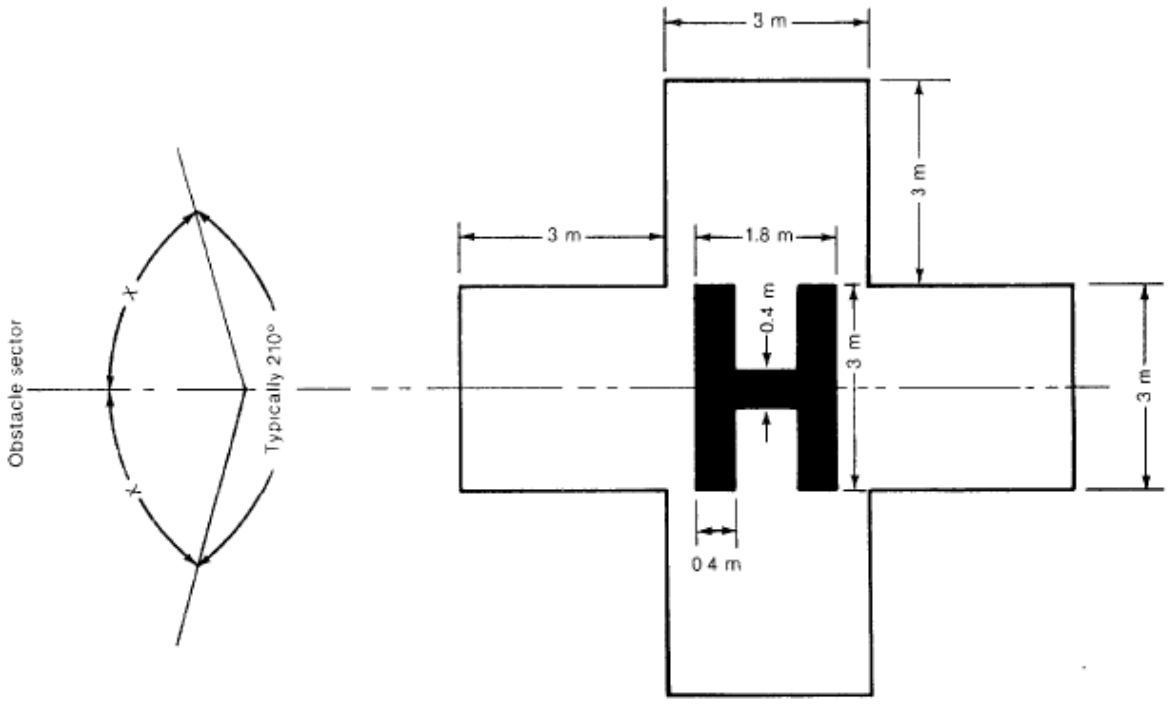
HELIDECK LIMITED OBSTACLE SECTOR TANDEM MAIN-ROTOR HELICOPTER OMNI-DIRECTIONAL OPERATION

APPENDIX E

HELIDECK LIMITED OBSTACLE SECTOR
TANDEM MAIN-ROTOR HELICOPTER
BI-DIRECTIONAL OPERATION

APPENDIX F

HELIPORT IDENTIFICATION MARKING
[shown with hospital cross]



APPENDIX G

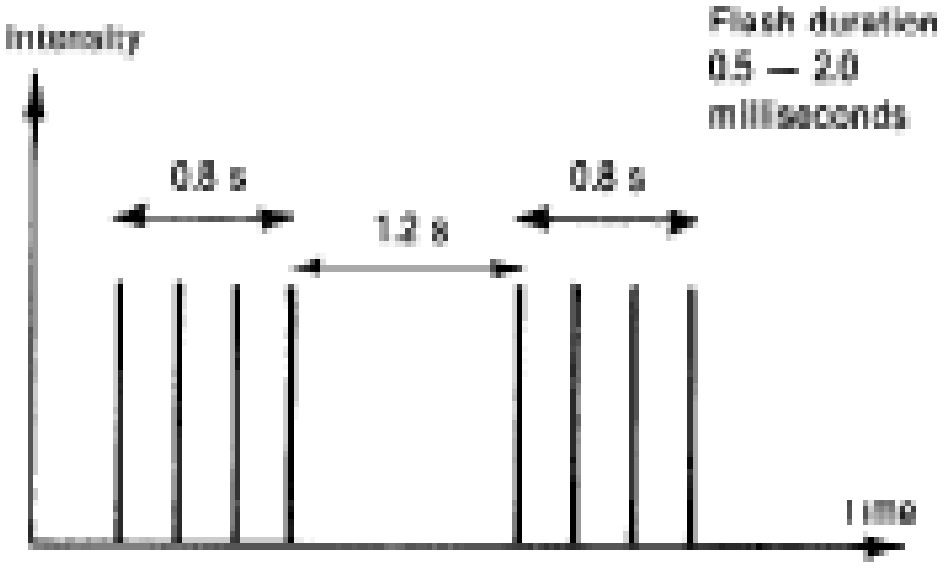
MAXIMUM ALLOWABLE MASS MARKING

APPENDIX H

OBSTACLE-FREE SECTOR MARKING

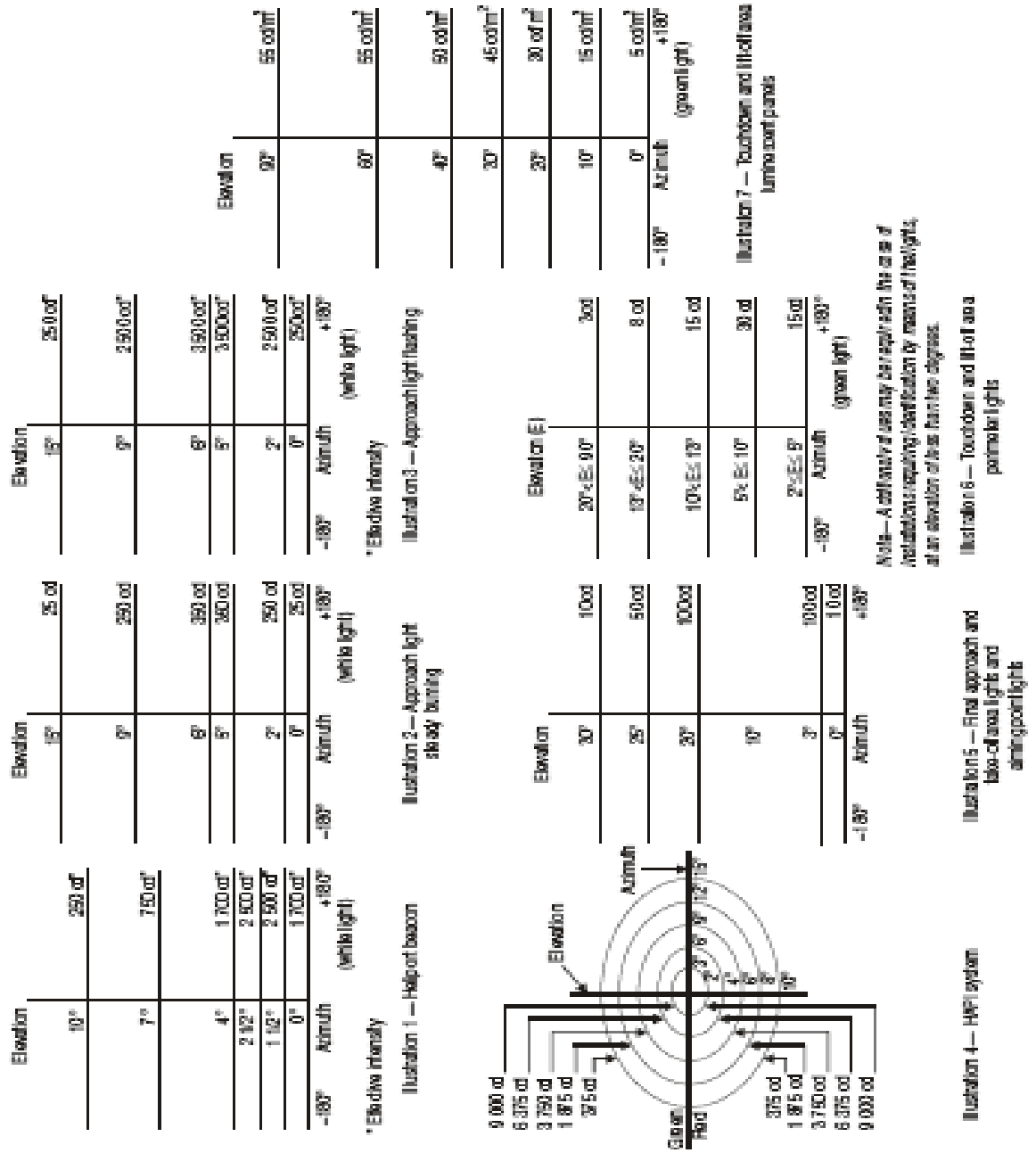
APPENDIX I

HELIPORT BEACON FLASH CHARACTERISTICS



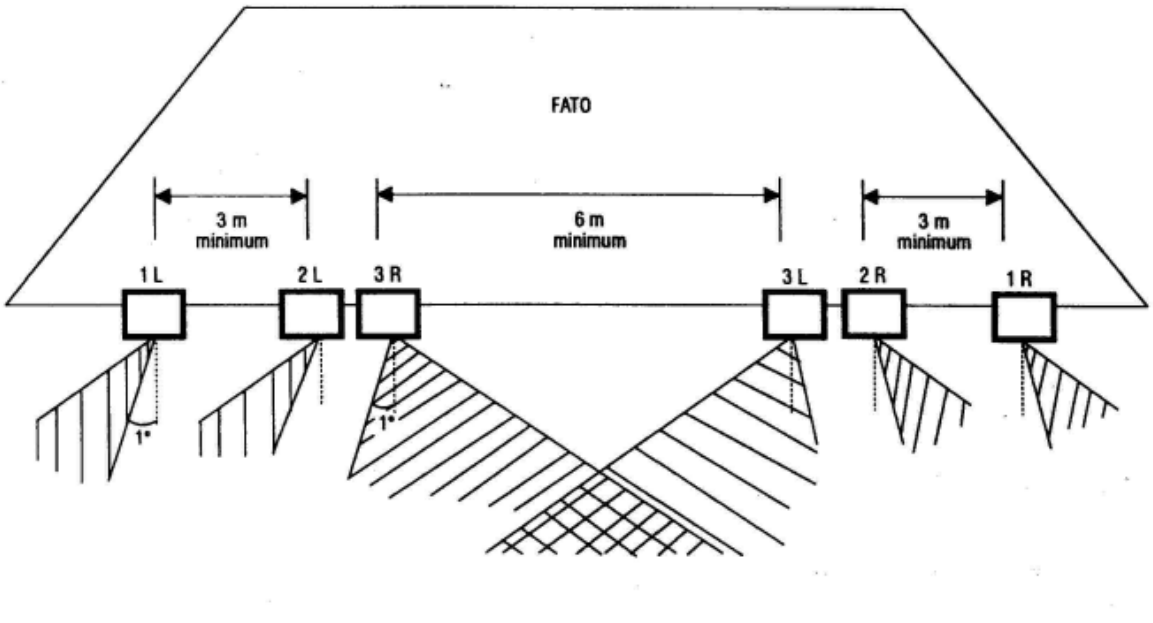
APPENDIX J

ISOCANDELA DIAGRAMS OF LIGHTS FOR HELIPORTS



APPENDIX K

VISUAL ALIGNMENT GUIDANCE SYSTEM



APPENDIX L

HELICOPTER APPROACH PATH INDICATOR

Sector	Format
Above	Flashing green
On slope	Green
Slightly below	Red
Below	Flashing red

Illustration A

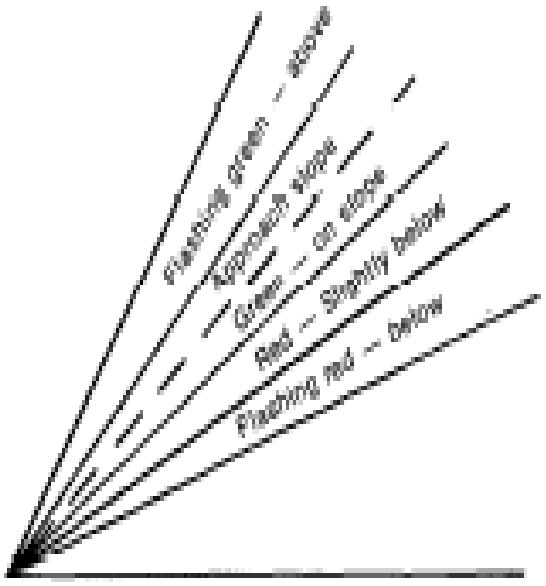


Illustration B